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Technical Specifications

# Equinox Evo



D-0141820-B – 2025/07



**Interacoustics**



## Standard and optional parts

### Standard parts

- Affinity/Equinox Suite
- DD45 Audiometric headset<sup>1</sup>
- Monitor Headset
- B81 Bone conductor<sup>1</sup>
- APS3 Patient response button<sup>1</sup>
- USB cable, 2 m
- Power supply
- Power cable
- Mouse pad
- Cleaning cloth

Standard parts may be replaced by an optional part dependent on the configuration ordered.

### Optional parts

- Touch Keyboard
- Audiometer Keyboard
- IP30 insert earphones<sup>1</sup>
- B71 Bone Conductor<sup>1</sup>
- IP30 insert phone – single sided<sup>1</sup>
- DD65 v2 audiometric headset<sup>1</sup>
- DD450 High frequency headset<sup>1</sup>
- SP90a Loudspeaker with Power supply UES60LCP2-240250SPA
- Splitter cable for patient response
- Speech microphone
- Ambient noise microphone
- Accessory bracket
- Table mount bracket
- Wall mount bracket
- OtoAccess® database

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<sup>1</sup> Applied part according to IEC 60601-1



# General technical specifications

## Equinox Evo - Technical Specifications

<b>Medical CE mark</b>	The CE mark indicates that Interacoustics A/S meets the requirements of the Medical Device Regulation (EU) 2017/745 Annex I. Approval of the quality system is made by TÜV – identification no. 0123.	
<b>Safety standards</b>	IEC 60601-1 2005+AMD1:2012+AMD2:2020 (Edition 3.2) ANSI/AAMI ES60601-1:2005 & A1:2012 & A2:2021 CSA-C22.2 No.60601-1:14 + A2:22 (R2022) Class I, Applied parts type B, Continuous operation	
<b>EMC standard</b>	IEC 60601-1-2:2014+AMD1:2020 Class B, group 1	
<b>Calibration</b>	Technical information is in the specifications for the software modules. Calibration information and instructions are located in the Service manual.	
<b>PC requirements (Minimum requirements)</b>	2 GHz Intel i3 processor 5 <sup>th</sup> generation or equal 4GB Ram 2.5 GB available disk space 1280x720 resolution (1280x1024 or higher recommended) Hardware accelerated DirectX/Direct3D graphics card. One or more USB ports, version 2.0 or higher.	
<b>Operating Systems</b>	Windows® 10 (64 bit) Windows® 11 (64 bit)	
<b>Compatible software</b>	Noah 4, OtoAccess® and XML compatible.	
<b>Input specifications</b>	<b>Talk back</b>	226mVrms at max. input gain for 0dB VU-reading Input impedance: 68KΩ 7mVrms max input with 10 dB headroom over 0dB Vu-reading
	<b>Mic. – Talk Forward</b>	226mVrms at max. input gain for 0dB VU-reading Input impedance: 68KΩ 7mVrms max input with 10 dB headroom over 0dB Vu-reading
	<b>Assistant monitor Mic.</b>	226μVrms at max input gain for 0 dB Vu-reading, Input impedance 68kΩ. 7mVrms max input with 10 dB headroom over 0dB Vu-reading
	<b>Patient respond</b>	Switches 3.3V to the logic input. (The switch current is 1.5mA)
	<b>AUX 1-2</b>	16mVrms at max. input gain for 0dB VU-reading Input impedance: 68KΩ 500mVrms max input with 10 dB headroom over 0dB Vu-reading
	<b>Talk back Ambient mic.</b>	Max input level before clipping 70mVrms. Calibration by 94 dB SPL 250Hz or 1kHz. Input impedance: 68KΩ
<b>Output specifications</b>	<b>Phone</b>	Up to 7.0 Vrms by 10 W load 70Hz-20kHz ±3dB
	<b>Insert</b>	Up to 7.0 Vrms by 10 Ω load 70Hz-20kHz ±3dB
	<b>HF</b>	Up to 7Vrms by 10 W load 70Hz-20kHz ±3dB
	<b>Bone</b>	Up to 7.0 Vrms by 10 Ω load 70Hz-20kHz ±3dB
	<b>FF1 / FF2 power</b>	Up to 14.0Vrms by 8 W load 70Hz-20kHz ±3dB Minimum speaker impedance: 4W



	<b>FF1-2 Line</b>	Up to 7.0 Vrms by 1 k $\Omega$ load 70Hz-20kHz $\pm$ 3dB
	<b>FF3-4 Line</b>	Up to 7.0 Vrms by 1 k $\Omega$ load 70Hz-20kHz $\pm$ 3dB
	<b>Monitor</b>	Up to 1.5Vrms by 8 $\Omega$ load 125-20kHz $\pm$ 3dB
	<b>Assistant monitor</b>	Up to 1.5Vrms by 8 $\Omega$ load 125-20kHz $\pm$ 3dB
	<b>VRA</b>	Contact switch current < 500mA
<b>Data connections</b>	<b>USB-PC</b>	USB B socket for connection to PC (compatible with USB 2.0 and later)
<b>Dimensions (LxWxH)</b>	26.4 x 26.4 x 6 cm / 10.4 x 10.4 x 2.4 inches	
<b>Weight</b>	1.8 kg / 4.0 lbs.	
<b>Power supply</b>	Type: UES65-240250SPA3 Input: 100-240VAC 50/60Hz, 2.0 A Output: 24.0 VDC, 2.5 A Average consumption: 24.1W	
<b>Operation environment</b>	Atmospheric pressure: 98 kPa – 104 kPa Temperature: 15 °C – 35 °C Re. Humidity: 30 – 90 % Non-condensing	
<b>Transport and storage</b>	Transport temperature: -20 °C – 50 °C Storage temperature: 0 °C – 50 °C Re. Humidity: 10 – 95 % Non-condensing	



## Technical Specifications - AC440 software

<b>Medical CE-mark:</b>	The CE mark in combination with MD symbol indicates that Interacoustics A/S meets the requirements of the Medical Device Regulation (EU) 2017/745 Annex I Approval of the quality system is made by TÜV – identification no. 0123.	
<b>Audiometer standards:</b>	IEC 60645-1:2017, Type 1EHF Class A-E ANSI S3.6-2018 (R2023), Type 1HF Class B	
<b>Transducers &amp; calibration:</b>	Calibration information and instructions are located in the Service manual. Check the accompanying Appendix for RETSPL levels for transducers	
<b>Air Conduction</b> DD45 DD65 v2  DD450 IP30	ISO 389-1:2017, ANSI S3.6-2018 PTB 1.61-4091606/18, AAU 2018  ISO 389-8:2004, ANSI S3.6-2018 ISO 389-2:1994 ANSI S3.6-2018	Headband Static Force 4.5N ±0.5N Headband Static Force 11.5N ±0.5N Headband Static Force 10N ±0.5N
<b>Bone Conduction</b> B71 B-81	Placement: Mastoid ISO 389-3:2016, ANSI S3.6-2018  ISO 389-3:2016, ANSI S3.6-2018	Headband Static Force 5.4N ±0.5N Headband Static Force 5.4N ±0.5N
<b>Free Field</b>	ISO 389-7:2019 ANSI S3.6-2018	
<b>High Frequency</b>	ISO 389-5:2006, ANSI S3.6-2018	
<b>Effective masking</b>	ISO 389-4:1994, ANSI S3.6-2018	
<b>Patient response switch:</b>	Handheld push button	
<b>Patient communication:</b>	Talk Forward and Talk Back	
<b>Monitor:</b>	Output through external headset	
<b>Stimuli:</b>	Pure tone, Warble tone, NB, SN, WN, TEN noise, PED noise, Wave files	
<b>Tone</b>	125-20000 Hz separated in two ranges 125-8000 Hz and 8000-20000Hz. Resolution 1/2-1/24 octave	
<b>Warble tone</b>	125-16000 Hz separated in two ranges 125-8000 Hz and 8000-16000Hz 1-10 Hz sine +/- 5% modulation	
<b>PED noise</b>	125-20000 Hz separated in two ranges 125-8000 Hz and 8000-20000Hz. Resolution 1/2-1/24 octave	
<b>Wave file</b>	44.100 Hz sampling, 16 bits, 2 channels	
<b>Masking</b>  Narrow band noise:  White noise: Speech noise.	Automatic selection of narrow band noise (or white noise) for tone presentation and speech noise for speech presentation. IEC 60645-1:2017, ANSI S3.6-2018, 5/12 Octave filter with the same center frequency resolution as pure tone 80-20.000 Hz measured with constant bandwidth IEC 60645-1:2017, ANSI S3.6-2018. 125-6.300 Hz falling 12dB/octave above 1 kHz +/-5 dB	
<b>Presentation</b>	Manual or Reverse. Single or multiple pulses. pulse time adjustable from 200 mS-5000 mS in 50 mS steps. Simultaneous or alternating	
<b>Intensity</b>	Check the accompanying Appendix for maximum output levels	
<b>Steps</b>	Available Intensity Steps is 1, 2 or 5 dB	
<b>Accuracy</b>	Sound pressure levels: ± 3 dB Vibration force levels: ± 4 dB	
<b>Extended range function</b>	If not activated, the Air Conduction output will be limited to 20 dB below maximum output	



<b>Frequency</b>	Range: 125 Hz to 8 kHz (Optional High Frequency: 8 kHz to 20 kHz) Accuracy: Better than $\pm 1\%$
<b>Distortion (THD)</b>	Sound pressure levels: below 2.5 % Vibration force levels: below 5.5 %
<b>Signal indicator (VU):</b>	Time weighting: 350 mS Dynamic range: -20 dB to +3 dB Rectifier characteristics: RMS Selectable inputs are provided with an attenuator by which the level can be adjusted to the indicator reference position (0 dB)
<b>Free field output level:</b>	Compliant to IEC 60645-1:2017/ANSI S3.6-2018 at a distance of 1 meter from speaker
<b>Storing capability:</b>	Tone audiogram: dB HL, MCL, UCL, Tinnitus. Speech Audiogram: WR1, WR2, WR3, MCL, UCL, Aided, Unaided, Binaural
<b>Compatible software:</b>	Noah 4, OtoAccess®



## Touch Keyboard (Optional) - Technical specifications

<b>Dimensions (LxWxH)</b>	16.4 x 33.0 x 5.1 cm / 6.5 x 13.0 x 2.0 inches
<b>Weight</b>	1.1 kg / 5.5 lbs.
<b>Power supply</b>	Use only specified power supply unit UES60 type Input: 100-240VAC 50/60Hz, 1.3 A Output: 20.0 VDC, 3 A
<b>Battery type</b>	RRC1130 Lithium-Polymer (Li-Po) 3,8V - 3814mAh - 14.47Wh
<b>Battery cycle life</b>	Up to 80% of initial capacity after 800 cycles
<b>Charging current</b>	900mA @ USB-C PD 20V
<b>Working current</b>	300mA @ USB-C PD 20V
<b>Work time</b>	1 hour
<b>Connections</b>	USB 2.0 via USB-C, or Wireless
<b>Wireless characteristics</b>	
Transmitting distance	10+ meters <sup>2</sup>
Transmission power	0dBm
Transmission frequency	2400-2483,5 MHz
<b>Magnetic emission</b>	
<b>Operation environment</b>	Atmospheric pressure: 98 kPa – 104 kPa Temperature: 15 °C – 35 °C Re. Humidity: 30 – 90 % Non-condensing
<b>Transport and storage</b>	Transport temperature: -20 °C – 50 °C Storage temperature: 0 °C – 50 °C Re. Humidity: 10 – 95 % Non-condensing

<sup>2</sup> Measured in free space with no obstructions in between.



## Tone reference equivalent threshold values for transducers

PURE TONE RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSPL	RETSPL	RETSPL	RETSPL	RETFL	RETFL	RETFL	RETFL
Tone 125 Hz	47.5	30.5	30.5	26				
Tone 160 Hz	40.5	25.5	26	22				
Tone 200 Hz	33.5	21.5	22	18				
Tone 250 Hz	27	17	18	14	67	79	67	79
Tone 315 Hz	22.5	14	15.5	12	64	76.5	64	76.5
Tone 400 Hz	17.5	10.5	13.5	9	61	74.5	61	74.5
Tone 500 Hz	13	8	11	5.5	58	72	58	72
Tone 630 Hz	9	6.5	8	4	52.5	66	52.5	66
Tone 750 Hz	6.5	5.5	6	2	48.5	61.5	48.5	61.5
Tone 800 Hz	6.5	5	6	1.5	47	59	47	59
Tone 1000 Hz	6	4.5	5.5	0	42.5	51	42.5	51
Tone 1250 Hz	7	3.5	6	2	39	49	39	49
Tone 1500 Hz	8	2.5	5.5	2	36.5	47.5	36.5	47.5
Tone 1600 Hz	8	2.5	5.5	2	35.5	46.5	35.5	46.5
Tone 2000 Hz	8	2.5	4.5	3	31	42.5	31	42.5
Tone 2500 Hz	8	2	3	5	29.5	41.5	29.5	41.5
Tone 3000 Hz	8	2	2.5	3.5	30	42	30	42
Tone 3150 Hz	8	3	4	4	31	42.5	31	42.5
Tone 4000 Hz	9	9.5	9.5	5.5	35.5	43.5	35.5	43.5
Tone 5000 Hz	13	15.5	14	5	40	51	40	51
Tone 6000 Hz	20.5	21	17	2	40	51	40	51
Tone 6300 Hz	19	21	17.5	2	40	50	40	50
Tone 8000 Hz	12	21	17.5	0	40	50	40	50
Tone 9000 Hz			19					
Tone 10000 Hz			22					
Tone 11200 Hz			23					
Tone 12500 Hz			27.5					
Tone 14000 Hz			35					
Tone 16000 Hz			56					
Tone 18000 Hz			83					
Tone 20000 Hz			105					

DD45 6ccm uses IEC 60318-3 or NBS 9A coupler and RETSPL comes from ISO 389-1:2017, ANSI S3.6-2018 and ISO389-1:2017. Force 4.5N ±0.5N

DD65V2 Artificial ear uses IEC 60318-1 coupler with type 1 adaptor and RETSPL comes from PTB 1.61-4091606 2018 & AAU 2018, Force 11.5N ±0.5N

DD450 Artificial ear uses IEC 60318-1 coupler with type 1 adaptor and RETSPL comes from ANSI S3.6-2018 and ISO 389-8:2004. Force 9N ±0.5N

IP30 2ccm use ANSI S3.7-1995 or IEC 60318-5 coupler (HA-2 with 5mm rigid Tube) and RETSPL comes from ANSI S3.6-2018 and ISO 389-2:1994.

B71 / B-81 use ANSI S3.13 or IEC 60318-6:2007 mechanical coupler and RETFL come from ANSI S3.6:2018 and ISO 389-3:2016 Force 5.4N ±0.5N



PURE TONE MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
Signal	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL
Tone 125 Hz	90	85	100	90				
Tone 160 Hz	95	90	105	95				
Tone 200 Hz	100	95	105	100				
Tone 250 Hz	110	100	110	105	45	30	50	35
Tone 315 Hz	115	105	115	105	50	35	60	45
Tone 400 Hz	120	110	115	110	65	50	70	55
Tone 500 Hz	120	110	115	110	65	50	70	55
Tone 630 Hz	120	110	120	115	70	55	75	60
Tone 750 Hz	120	115	120	115	70	55	75	60
Tone 800 Hz	120	115	120	115	70	55	75	60
Tone 1000 Hz	120	115	120	120	70	60	85	75
Tone 1250 Hz	120	115	110	120	70	60	90	80
Tone 1500 Hz	120	115	115	120	70	55	90	80
Tone 1600 Hz	120	115	115	120	70	55	90	75
Tone 2000 Hz	120	115	115	120	75	60	90	75
Tone 2500 Hz	120	115	115	120	80	65	85	70
Tone 3000 Hz	120	115	115	120	80	65	85	70
Tone 3150 Hz	120	115	115	120	80	65	85	70
Tone 4000 Hz	120	110	115	115	80	70	85	70
Tone 5000 Hz	120	105	105	105	60	45	70	55
Tone 6000 Hz	115	100	105	100	50	35	60	50
Tone 6300 Hz	115	100	105	100	50	40	55	45
Tone 8000 Hz	110	95	105	95	50	40	50	40
Tone 9000 Hz			100					
Tone 10000 Hz			100					
Tone 11200 Hz			95					
Tone 12500 Hz			90					
Tone 14000 Hz			80					
Tone 16000 Hz			60					
Tone 18000 Hz			30					
Tone 20000 Hz			15					



NB NOISE EFFECTIVE MASKING LEVEL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	EM	EM	EM	EM	EM	EM	EM	EM
NB 125 Hz	51.5	34.5	34.5	30				
NB 160 Hz	44.5	29.5	30	26				
NB 200 Hz	37.5	25.5	26	22				
NB 250 Hz	31	21	22	18	71	83	71	83
NB 315 Hz	26.5	18	19.5	16	68	80.5	68	80.5
NB 400 Hz	21.5	14.5	17.5	13	65	78.5	65	78.5
NB 500 Hz	17	12	15	9.5	62	76	62	76
NB 630 Hz	14	11.5	13	9	57.5	71	57.5	71
NB 750 Hz	11.5	10.5	11	7	53.5	66.5	53.5	66.5
NB 800 Hz	11.5	10	11	6.5	52	64	52	64
NB 1000 Hz	12	10.5	11.5	6	48.5	57	48.5	57
NB 1250 Hz	13	9.5	12	8	45	55	45	55
NB 1500 Hz	14	8.5	11.5	8	42.5	53.5	42.5	53.5
NB 1600 Hz	14	8.5	11.5	8	41.5	52.5	41.5	52.5
NB 2000 Hz	14	8.5	10.5	9	37	48.5	37	48.5
NB 2500 Hz	14	8	9	11	35.5	47.5	35.5	47.5
NB 3000 Hz	14	8	8.5	9.5	36	48	36	48
NB 3150 Hz	14	9	10	10	37	48.5	37	48.5
NB 4000 Hz	14	14.5	14.5	10.5	40.5	48.5	40.5	48.5
NB 5000 Hz	18	20.5	19	10	45	56	45	56
NB 6000 Hz	25.5	26	22	7	45	56	45	56
NB 6300 Hz	24	26	22.5	7	45	55	45	55
NB 8000 Hz	17	26	22.5	5	45	55	45	55
NB 9000 Hz			24					
NB 10000 Hz			27					
NB 11200 Hz			28					
NB 12500 Hz			32.5					
NB 14000 Hz			40					
NB 16000 Hz			61					
NB 18000 Hz			88					
NB 20000 Hz			110					
White noise	0	0	0	0	42.5	51	42.5	51
TEN noise	25			16				

Effective masking value is RETSPL / RETFL add 1/3 octave correction for Narrow-band noise from ANSI S3.6-2018 or ISO 389-4:1994.



NB NOISE MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max HL	Max. HL	Max. HL	Max HL	Max. HL	Max HL
NB 125 Hz	75	75	75	90				
NB 160 Hz	80	80	80	95				
NB 200 Hz	90	85	80	100				
NB 250 Hz	95	90	85	105	35	20	40	25
NB 315 Hz	100	95	90	105	40	25	50	35
NB 400 Hz	105	100	95	105	55	40	60	45
NB 500 Hz	110	100	95	110	55	40	60	45
NB 630 Hz	110	100	95	110	60	45	65	50
NB 750 Hz	110	105	100	110	60	45	65	50
NB 800 Hz	110	105	100	110	60	45	65	50
NB 1000 Hz	110	105	100	110	60	50	70	60
NB 1250 Hz	110	105	95	110	60	50	75	60
NB 1500 Hz	110	105	100	110	60	45	75	60
NB 1600 Hz	110	105	100	110	60	45	75	60
NB 2000 Hz	110	105	100	110	65	50	70	55
NB 2500 Hz	110	105	100	110	65	50	65	50
NB 3000 Hz	110	105	100	110	65	50	65	50
NB 3150 Hz	110	100	100	110	65	50	65	50
NB 4000 Hz	110	100	100	110	65	55	60	50
NB 5000 Hz	110	95	95	105	50	35	55	45
NB 6000 Hz	105	90	90	100	45	30	50	40
NB 6300 Hz	105	90	90	100	40	30	45	35
NB 8000 Hz	100	85	90	95	40	30	40	30
NB 9000 Hz			85					
NB 10000 Hz			85					
NB 11200 Hz			80					
NB 12500 Hz			75					
NB 14000 Hz			70					
NB 16000 Hz			50					
NB 18000 Hz			20					
NB 20000 Hz			0					
White noise	120	120	115	110	70	70	70	60
TEN noise	110			100				



## Speech reference equivalent threshold value for transducer

ANSI SPEECH RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
Impedance	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSPL	RETSPL	RETSPL	RETSPL	RETFL	RETFL	RETFL	RETFL
Speech	18.5	17	19					
Speech Equ.FF.	18.5	16.5	18.5					
Speech Non-linear	6	4.5	5.5	12.5	55	63.5	55	63.5
Speech noise	18.5	17	19					
Speech noise Equ.FF.	18.5	16.5	18.5					
Speech noise Non-linear	6	4.5	5.5	12.5	55	63.5	55	63.5
White noise in speech	21	19.5	21.5	15	57.5	66	57.5	66

DD45 (G<sub>F</sub>-G<sub>C</sub>) PTB-DTU report 2009-2010.

DD65V2 (GF-GC) PTB-AAU report 2018.

DD450 (G<sub>F</sub>-G<sub>C</sub>) ANSI S3.6-2018 and ISO 389-8:2004.

ANSI Speech level 12.5 dB + 1 kHz RETSPL ANSI S3.6-2018 (acoustical linear weighting).

ANSI Speech Equivalent free field level 12.5 dB + 1 kHz RETSPL - (G<sub>F</sub>-G<sub>C</sub>) from ANSI S3.6-2018 (acoustical equivalent sensitivity weighting).

ANSI Speech Not linear level 1 kHz RETSPL ANSI S3.6-2018 (DD45, DD65V2, DD450) and IP30, B71 and B81 12.5 dB + 1 kHz RETSPL ANSI S3.6-2018 (no weighting).

ANSI SPEECH MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
Impedance	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL
Speech	110	100	90					
Speech Equ.FF.	100	95	85					
Speech Non-linear	120	110	110	110	60	40	60	50
Speech noise	100	95	85					
Speech noise Equ.FF.	100	90	80					
Speech noise Non-linear	115	105	105	110	50	40	50	40
White noise in speech	95	95	90	95	55	45	60	50



IEC SPEECH RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
Impedance	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSP L	RETSPL	RETSPL	RETSP L	RETFL	RETFL	RETFL	RETFL
Speech	20	20	20					
Speech Equ.FF.	3.5	1.5	3.5					
Speech Non-linear	6	4.5	5.5	20	55	63.5	55	63.5
Speech noise	20	20	20					
Speech noise Equ.FF.	3.5	1.5	3.5					
Speech noise Non-linear	6	4.5	5.5	20	55	63.5	55	63.5
White noise in speech	22.5	22.5	22.5	22.5	57.5	66	57.5	66

DD45 (G<sub>F</sub>-G<sub>C</sub>) PTB-DTU report 2009-2010.

DD65V2 (GF-GC) PTB-AAU report 2018.

DD450 (G<sub>F</sub>-G<sub>C</sub>) ANSI S3.6-2018 and ISO 389-8:2004.

IEC Speech level IEC 60645-1:2017 (acoustical linear weighting).

IEC Speech Equivalent free field level (G<sub>F</sub>-G<sub>C</sub>) from IEC 60645-1:2017 (acoustical equivalent sensitivity weighting).

IEC Speech Not linear level 1 kHz RETSPL (DD45, DD65V2, DD450) and IP30, B7 and B81 IEC 60645-1:2017 (no weighting).

IEC SPEECH MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL
Speech	110	95	90					
Speech Equ.FF.	115	110	100					
Speech Non-linear	120	110	110	100	60	40	60	50
Speech noise	100	90	85					
Speech noise Equ.FF.	115	10	95					
Speech noise Non-linear	115	105	105	90	50	40	50	40
White noise in speech	95	95	90	85	55	45	60	50



SWEDEN SPEECH RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
Impedance	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSPL	RETSPL	RETSPL	RETSPL	RETFL	RETFL	RETFL	RETFL
Speech	22	20	20					
Speech Equ.FF.	3.5	1.5	3.5					
Speech Non-linear	22	4.5	5.5	21	55	63.5	55	63.5
Speech noise	27	20	20					
Speech noise Equ.FF.	3.5	1.5	3.5					
Speech noise Non-linear	27	4.5	5.5	26	55	63.5	55	63.5
White noise in speech	22.5	22.5	22.5	22.5	57.5	66	57.5	66

DD45 (G<sub>F</sub>-G<sub>C</sub>) PTB-DTU report 2009-2010.

DD65V2 (GF-GC) PTB-AAU report 2018.

DD450 (G<sub>F</sub>-G<sub>C</sub>) ANSI S3.6-2018 and ISO 389-8:2004.

Sweden Speech level STAF 1996 and IEC 60645-1:2017 (acoustical linear weighting).

Sweden Speech Equivalent free field level (G<sub>F</sub>-G<sub>C</sub>) from IEC 60645-1:2017 (acoustical equivalent sensitivity weighting).

Sweden Speech Not linear level 1 kHz RETSPL (DD45, DD65V2, DD450) and IP30, B71 and B81 STAF 1996 and IEC 60645-1:2017 (no weighting).

SWEDEN SPEECH MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL	Max. HL
Speech	108	95	90					
Speech Equ.FF.	115	110	100					
Speech Non-linear	104	110	110	99	60	40	60	50
Speech noise	93	90	85					
Speech noise Equ.FF.	115	100	95					
Speech noise Non-linear	94	105	105	84	50	40	50	40
White noise in speech	95	95	90	85	55	45	60	50



NORWAY SPEECH RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSP L	RETSPL	RETSPL	RETSP L	RETFL	RETFL	RETFL	RETFL
Speech	40	40	40					
Speech Equ.FF.	3.5	1.5	3.5					
Speech Non-linear	6	4.5	5.5	40	75	83.5	75	83.5
Speech noise	40	40	40					
Speech noise Equ.FF.	3.5	1.5	3.5					
Speech noise Non-linear	6	4.5	5.5	40	75	83.5	75	83.5
White noise in speech	22.5	22.5	22.5	22.5	57.5	66	57.5	66

DD45 (G<sub>F</sub>-G<sub>C</sub>) PTB-DTU report 2009-2010.

DD65V2 (GF-GC) PTB-AAU report 2018.s

DD450 (G<sub>F</sub>-G<sub>C</sub>) ANSI S3.6-2018 and ISO 389-8:2004.

Norway Speech level IEC 60645-1:2017 +20dB (acoustical linear weighting).

Norway Speech Equivalent free field level (G<sub>F</sub>-G<sub>C</sub>) from IEC 60645-1:2017 (acoustical equivalent sensitivity weighting).

Norway Speech Not linear level 1 kHz RETSPL (DD45, DD65V2, DD450) and IP30, B71 and B81 IEC 60645-1 2017 +20dB (no weighting).

NORWAY SPEECH MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max HL	Max. HL	Max. HL	Max HL	Max. HL	Max HL
Speech	90	75	70					
Speech Equ.FF.	115	110	100					
Speech Non-linear	120	110	110	80	40	20	40	30
Speech noise	80	70	65					
Speech noise Equ.FF.	115	100	95					
Speech noise Non-linear	115	105	105	70	30	20	30	20
White noise in speech	95	95	90	85	55	45	60	50



JAPAN SPEECH RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSP L	RETSPL	RETSPL	RETSPL	RETFL	RETFL	RETFL	RETFL
Speech	14	14	14					
Speech Equ.FF.	3.5	1.5	3.5					
Speech Non-linear	6	4.5	5.5	14	49	57.5	49	57.5
Speech noise	14	14	14					
Speech noise Equ.FF.	3.5	1.5	3.5					
Speech noise Non-linear	6	4.5	5.5	14	49	57.5	49	57.5
White noise in speech	22.5	22.5	22.5	22.5	57.5	66	57.5	66

DD45 (G<sub>F</sub>-G<sub>C</sub>) PTB-DTU report 2009-2010.

DD65 v2 (GF-GC) PTB-AAU report 2018.

DD450 (G<sub>F</sub>-G<sub>C</sub>) ANSI S3.6 2018 and ISO 389-8:2004.

Japan Speech level JIS T1201-2:2000 (acoustical linear weighting).

Japan Speech Equivalent free field level (G<sub>F</sub>-G<sub>C</sub>) from IEC60645-1 2017 (acoustical equivalent sensitivity weighting).

Japan Speech Not linear level 1 kHz RETSPL (DD45, DD65V2, DD450) and IP30, B71 and B81 IEC 60645-1:2017 (no weighting).

JAPAN SPEECH MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max HL	Max. HL	Max. HL	Max HL	Max. HL	Max HL
Speech	116	101	96					
Speech Equ.FF.	115	110	100					
Speech Non-linear	120	110	110	106	66	46	66	56
Speech noise	106	96	91					
Speech noise Equ.FF.	115	100	95					
Speech noise Non-linear	115	105	105	96	56	46	56	46
White noise in speech	95	95	90	85	55	45	60	50



SPL SPEECH RETSPL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	RETSPL	RETSPL	RETSPL	RETSPL	RETFL	RETFL	RETFL	RETFL
Speech	0	0	0	0	0	0	0	0
Speech Equ.FF.	0	0	0					
Speech Non-linear	0	0	0					
Speech noise	0	0	0	0	0	0	0	0
Speech noise Equ.FF.	0	0	0					
Speech noise Non-linear	0	0	0					

DD45 (G<sub>F</sub>-G<sub>C</sub>) PTB-DTU report 2009-2010.

DD65V2 (GF-GC) PTB-AAU report 2018.

DD450 (G<sub>F</sub>-G<sub>C</sub>) ANSI S3.6-2018 and ISO 389-8:2004.

SPL SPEECH MAX. HL								
TRANSDUCER	DD45	DD65 v2	DD450	IP30	B71	B71	B81	B81
IMPEDANCE	10 Ω	10 Ω	40 Ω	10 Ω	10 Ω	10 Ω	12.5 Ω	12.5 Ω
COUPLER	6ccm	ARTIFICIAL EAR	ARTIFICIAL EAR	2ccm	MASTOID	FOREHEAD	MASTOID	FOREHEAD
	Max. HL	Max. HL	Max HL	Max. HL	Max. HL	Max HL	Max. HL	Max HL
Speech	120	115	105	120	110	105	110	105
Speech Equ.FF.	115	110	100					
Speech Non-linear	120	110	115					
Speech noise	115	110	100	110	105	100	105	100
Speech noise Equ.FF.	115	105	95					
Speech noise Non-linear	120	105	110					
White noise in speech	115	115	110	105	110	108.5	115	113.5



FREE FIELD										
ANSI S3.6-2018					FREE FIELD MAX. SPL					
ISO 389-7:2005					FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE					
FREQUENCY	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER		FREE FIELD LINE		FREE FIELD INTERNAL	
	0°	45°	90°	CORRECTION	0°	90°	0°	90°	0°	90°
Hz	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL	MAX. SPL	MAX. SPL	MAX. SPL
125	22	21.5	21	2	97	82	102	97	82	72
160	18	17	16.5	2	93	83	98	93	78	68
200	14.5	13.5	13	2	94.5	84.5	104.5	99.5	84.5	74.5
250	11.5	10.5	9.5	2	96.5	86.5	106.5	101.5	86.5	76.5
315	8.5	7	6	2	93.5	83.5	103.5	98.5	83.5	73.5
400	6	3.5	2.5	2	96	86	106	101	91	81
500	4.5	1.5	0	2	94.5	84.5	104.5	99.5	89.5	79.5
630	3	-0.5	-2	2	93	83	103	98	88	78
750	2.5	-1	-2.5	2	92.5	82.5	102.5	97.5	87.5	77.5
800	2	-1.5	-3	2	92	87	107	102	87	77
1000	2.5	-1.5	-3	2	92.5	82.5	102.5	97.5	87.5	77.5
1250	3.5	-0.5	-2.5	2	93.5	83.5	103.5	98.5	88.5	78.5
1500	2.5	-1	-2.5	2	92.5	82.5	102.5	97.5	87.5	77.5
1600	1.5	-2	-3	2	96.5	86.5	106.5	101.5	91.5	81.5
2000	-1.5	-4.5	-3.5	2	93.5	83.5	103.5	98.5	88.5	78.5
2500	-4	-7.5	-6	2	91	81	101	96	86	76
3000	-6	-11	-8.5	2	94	84	104	94	89	79
3150	-6	-11	-8	2	94	84	104	94	89	79
4000	-5.5	-9.5	-5	2	94.5	84.5	104.5	99.5	89.5	79.5
5000	-1.5	-7.5	-5.5	2	93.5	83.5	108.5	98.5	88.5	78.5
6000	4.5	-3	-5	2	94.5	84.5	104.5	99.5	89.5	79.5
6300	6	-1.5	-4	2	96	86	106	96	91	81
8000	12.5	7	4	2	87.5	72.5	92.5	87.5	87.5	77.5
White Noise	0	-4	-5.5	2		90		100		85

ANSI FREE FIELD							
ANSI S3.6-2018				FREE FIELD MAX. SPL			
				FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE			
	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER	FREE FIELD LINE	FREE FIELD INTERNAL
	0°	45°	90°	CORRECTION	0° - 45° - 90°	0° - 45° - 90°	0° - 45° - 90°
	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL
Speech	15	11	9.5	2	90	100	80
Speech Noise	15	11	9.5	2	85	100	75
Speech WN	17.5	13.5	12	2	87.5	97.5	82.5

IEC FREE FIELD							
ISO 389-7:2005				FREE FIELD MAX. SPL			
				FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE			
	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER	FREE FIELD LINE	FREE FIELD INTERNAL
	0°	CORRECTION	90°	CORRECTION	0° - 45° - 90°	0° - 45° - 90°	0° - 45° - 90°
	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL
Speech	0	-4	-5.5	2	90	100	80
Speech Noise	0	-4	-5.5	2	85	100	75
Speech WN	2.5	-1.5	-3	2	87.5	97.5	82.5



SWEDEN FREE FIELD							
ISO 389-7:2005				FREE FIELD MAX. SPL			
				FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE			
	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER	FREE FIELD LINE	FREE FIELD INTERNAL
	0°	45°	90°	CORRECTION	0° - 45° - 90°	0° - 45° - 90°	0° - 45° - 90°
	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL
Speech	0	-4	-5.5	2	90	100	80
Speech Noise	0	-4	-5.5	2	85	100	75
Speech WN	2.5	-1.5	-3	2	87.5	97.5	82.5

NORWAY FREE FIELD							
ISO 389-7:2005				FREE FIELD MAX. SPL			
				FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE			
	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER	FREE FIELD LINE	FREE FIELD INTERNAL
	0°	45°	90°	CORRECTION	0° - 45° - 90°	0° - 45° - 90°	0° - 45° - 90°
	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL
Speech	0	-4	-5.5	2	90	100	80
Speech Noise	0	-4	-5.5	2	85	100	75
Speech WN	2.5	-1.5	-3	2	87.5	97.5	82.5

JAPAN FREE FIELD							
ISO 389-7:2005				FREE FIELD MAX. SPL			
				FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE			
	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER	FREE FIELD LINE	FREE FIELD INTERNAL
	0°	45°	90°	CORRECTION	0° - 45° - 90°	0° - 45° - 90°	0° - 45° - 90°
	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL
Speech	10	6	4.5	2	90	100	80
Speech Noise	10	6	4.5	2	85	100	75
Speech WN	2.5	-1.5	-3	2	87.5	97.5	82.5

SPL FREE FIELD							
ISO 389-7:2005				FREE FIELD MAX. SPL			
				FREE FIELD MAX. HL IS FOUND BY SUBTRACTING THE SELECTED RETSPL VALUE			
	BINAURAL			BINAURAL TO MONAURAL	FREE FIELD POWER	FREE FIELD LINE	FREE FIELD INTERNAL
	0°	45°	90°	CORRECTION	0° - 45° - 90°	0° - 45° - 90°	0° - 45° - 90°
	RETSPL	RETSPL	RETSPL	RETSPL	MAX. SPL	MAX. SPL	MAX. SPL
Speech	0	0	0	0	90	100	80
Speech Noise	0	0	0	0	85	100	75
Speech WN	2.5	-1.5	-3	2	87.5	97.5	82.5




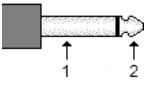

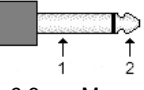
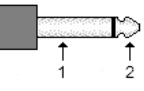
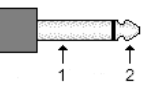

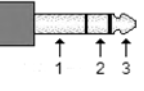
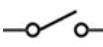
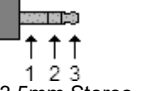
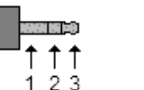
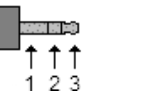
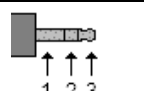
EQUIVALENT FREE FIELD			
SPEECH AUDIOMETER			
	DD45	DD65V2	DD450
	PTB – DTU 2010	PTB-AAU 2018	ISO389-8:2004
COUPLER	IEC 60318-3	IEC 60318-1	IEC 60318-1
FREQUENCY	G <sub>F</sub> -G <sub>c</sub>	G <sub>F</sub> -G <sub>c</sub>	G <sub>F</sub> -G <sub>c</sub>
125	-21,5	-4,5	-5,0
160	-17,5	-3,5	-4,5
200	-14,5	-4,5	-4,5
250	-12,0	-4,5	-4,5
315	-9,5	-4,0	-5,0
400	-7,0	-2,0	-5,5
500	-7,0	-3,0	-2,5
630	-6,5	-2,0	-2,5
750			
800	-4,0	-2,0	-3,0
1000	-3,5	-1,5	-3,5
1250	-3,5	-1,5	-2,0
1500			
1600	-7,0	-3,0	-5,5
2000	-7,0	-2,5	-5,0
2500	-9,5	-2,5	-6,0
3000		-5,5	
3150	-12,0	-9,5	-7,0
4000	-8,0	-9,5	-13,0
5000	-8,5	-13,0	-14,5
6000			
6300	-9,0	-9,0	-11,0
8000	-1,5	-4,5	-8,5

SOUND ATTENUATION VALUES FOR EARPHONES				
FREQUENCY	ATTENUATION			
	DD45 with MX41/AR or PN 51 Cushion	IP30	DD65V2	DD450
[Hz]	[dB]*	[dB]*	[dB]*	[dB]*
125	3	33	8.3	15
160	4	34	8.7	15
200	5	35	11.7	16
250	5	36	15.5	16
315	5	37	19.5	18
400	6	37	23.4	20
500	7	38	26.1	23
630	9	37	28.5	25
750	-			
800	11	37	28.2	27
1000	15	37	32.4	29
1250	18	35	30.8	30
1500	-			
1600	21	34	33.7	31
2000	26	33	43.6	32
2500	28	35	47.5	37
3000	-			
3150	31	37	41.5	41
4000	32	40	43.8	46
5000	29	41	46.7	45
6000	-			
6300	26	42	45.7	45
8000	24	43	45.6	44




\*ISO 8253-1:2010



## Pin assignments

Socket	Connector	Pin 1	Pin 2	Pin 3	Pin 4
Mains +24Vdc	 DC connector	+24Vdc	0Vdc	N/A	N/A
AC1-Left	 6.3mm Mono	Ground	Signal	N/A	N/A
AC1-Right					
AC2-Left	 6.3mm Mono	Ground	Signal	N/A	N/A
AC2-Right					
AC3-Left	 6.3mm Mono	Ground	Signal	N/A	N/A
AC3-Right					
Bone	 6.3mm Mono	Ground	Signal	N/A	N/A
FF1	 6.3mm Mono	Signal -	Signal +	N/A	N/A
FF2	 6.3mm Mono	Signal -	Signal +	N/A	N/A
Patient response	 6.3mm Stereo	Ground	Ground		N/A
FF1-2 line out	 3.5mm Stereo	Ground	Signal FF1 line	Signal FF2 line	N/A
FF3-4 line out	 3.5mm Stereo	Ground	Signal FF3 line	Signal FF4 line	N/A
Monitor Headset	 3.5mm Stereo	Monitor ground	Monitor Right	Monitor Left	N/A
Talk Forward Mic	 3.5mm Stereo	Ground	DC bias	Signal	N/A



Socket	Connector	Pin 1	Pin 2	Pin 3	Pin 4
AUX	 3.5mm Stereo	Ground	AUX-2	AUX-1	N/A
Assistant Monitor	 3.5mm 4-pin	Mic. signal	Ground	Monitor Right	Monitor Left
Talk Back / Ambient		Ground	Mic. One wire	Mic. Bias	Mic. Signal
VRA		Common	VRA-3	VRA-2	VRA-1
USB connector	 USB device	+5 VDC	Data -	Data +	Ground



## Electromagnetic compatibility (EMC) Equinox Evo

The Equinox Evo is suitable in hospital and clinical environments except for near-active HF surgical equipment and RF-shielded rooms of systems for magnetic resonance imaging, where the intensity of electromagnetic disturbance is high.

ESSENTIAL PERFORMANCE for this instrument is defined by the manufacturer as:

This instrument does not have an ESSENTIAL PERFORMANCE

Absence or loss of ESSENTIAL PERFORMANCE cannot lead to any unacceptable immediate risk

Final diagnosis shall always be based on clinical knowledge.

Use of this instrument adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this instrument and the other equipment should be observed to verify that they are operating normally.

Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of this equipment, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result in improper operation.

This instrument is in compliance with IEC60601-1-2:2014+AMD1:2020, emission class B group 1

NOTICE: There are no deviations from the collateral standard and allowances uses

NOTICE: All necessary instruction for maintaining compliance with regard to EMC can be found in the general maintenance section in this instruction. No further steps required.

To ensure compliance with the EMC requirements as specified in IEC 60601-1-2, it is essential to use only the following accessories:

Item	Manufacturer	Model
Power supply	Fuhua/UE Electronic	UES65-240250SPA3
USB cable	Sanibel	8011241

Conformance to the EMC requirements as specified in IEC 60601-1-2 is ensured if the cable types and cable lengths are as specified below:

Description	Length max [m]	Shielded (Yes/No)
Audiometric Headsets	2.0	Y
Audiometric Insert-Headsets	2.0	Y
Audiometric Headsets for High Frequency	2.0	Y
Bone conductors	2.0	N
Assistants Monitor Headsets	2.9	Y
Monitor Headsets w. microphone	2.9	Y
Patient response buttons	2.0	Y
Ambient Microphone	5.0	Y
Microphone for Talk Forward	2.0	Y
Microphone for Talk Back	2.0	Y
FF-Line cables for amplifier	1.0	Y
Loudspeakers (FF Power)	1.8	N
VRA cable	1.2	N




Guidance and manufacturer's declaration - electromagnetic emissions		
The EQUINOX EVO is intended for use in the electromagnetic environment specified below. The customer or the user of the EQUINOX EVO should assure that it is used in such an environment.		
Emissions Test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The <b>EQUINOX EVO</b> uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The <b>EQUINOX EVO</b> is suitable for use in all commercial, industrial, business, and residential environments.
Harmonic emissions IEC 61000-3-2	Complies Class A Category	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

Recommended separation distances between portable and mobile RF communications equipment and the EQUINOX EVO.			
The <b>EQUINOX EVO</b> is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the <b>EQUINOX EVO</b> can help prevent electromagnetic interferences by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the <b>EQUINOX EVO</b> as recommended below, according to the maximum output power of the communications equipment.			
Rated Maximum output power of transmitter [W]	Separation distance according to frequency of transmitter [m]		
	150 kHz to 80 MHz $d = 1.17\sqrt{P}$	80 MHz to 800 MHz $d = 1.17\sqrt{P}$	800 MHz to 2.7 GHz $d = 2.23\sqrt{P}$
<b>0.01</b>	0.12	0.12	0.23
<b>0.1</b>	0.37	0.37	0.74
<b>1</b>	1.17	1.17	2.33
<b>10</b>	3.70	3.70	7.37
<b>100</b>	11.70	11.70	23.30
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
<b>Note 1</b> At 80 MHz and 800 MHz, the higher frequency range applies.			
<b>Note 2</b> These guidelines may not apply to all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			



<b>Guidance and Manufacturer's Declaration - Electromagnetic Immunity</b>			
The <b>EQUINOX EVO</b> is intended for use in the electromagnetic environment specified below. The customer or the user of the <b>EQUINOX EVO</b> should assure that it is used in such an environment.			
<b>Immunity Test</b>	<b>IEC 60601 Test level</b>	<b>Compliance</b>	<b>Electromagnetic Environment-Guidance</b>
Electrostatic Discharge (ESD)  IEC 61000-4-2	+8 kV contact  +15 kV air	+8 kV contact  +15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be greater than 30%.
Electrical fast transient/burst  IEC61000-4-4	+2 kV for power supply lines  +1 kV for input/output lines	+2 kV for power supply lines  +1 kV for input/output lines	Mains power quality should be that of a typical commercial or residential environment.
Surge  IEC 61000-4-5	+1 kV differential mode  +2 kV common mode	+1 kV differential mode  +2 kV common mode	Mains power quality should be that of a typical commercial or residential environment.
Voltage dips, short interruptions and voltage variations on power supply lines  IEC 61000-4-11	< 5% UT (>95% dip in UT) for 0.5 cycle  40% UT (60% dip in UT) for 5 cycles  70% UT (30% dip in UT) for 25 cycles  <5% UT (>95% dip in UT) for 5 sec	< 5% UT (>95% dip in UT) for 0.5 cycle  40% UT (60% dip in UT) for 5 cycles  70% UT (30% dip in UT) for 25 cycles  <5% UT	Mains power quality should be that of a typical commercial or residential environment. If the user of the <b>EQUINOX EVO</b> requires continued operation during power mains interruptions, it is recommended that the <b>EQUINOX EVO</b> be powered from an uninterruptable power supply or its battery.
Power frequency (50/60 Hz)  IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or residential environment.
<b>Note:</b> UT is the A.C. mains voltage prior to application of the test level.			



Guidance and manufacturer's declaration — electromagnetic immunity			
The <b>EQUINOX EVO</b> is intended for use in the electromagnetic environment specified below. The customer or the user of the <b>EQUINOX EVO</b> should assure that it is used in such an environment,			
Immunity test	IEC / EN 60601 test level	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF IEC / EN 61000-4-6</p> <p>Radiated RF IEC / EN 61000-4-3</p>	<p>3 Vrms 150kHz to 80 MHz</p> <p>6 Vrms in ISM bands 150kHz to 80 MHz 80 % AM at 1 kHz</p> <p>3 V/m 80 MHz to 2,7 GHz 80 % AM at 1 kHz</p>	<p>3 Vrms</p> <p>6 Vrms</p> <p>3 V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any parts of the <b>EQUINOX EVO</b>, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1,2\sqrt{P}$ $d = 1,2\sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = 2,3\sqrt{P} \quad 800 \text{ MHz to } 2,7 \text{ GHz}$ <p>Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, (a) should be less than the compliance level in each frequency range (b)</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
NOTE1 At 80 MHz and 800 MHz, the higher frequency range applies			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
<p>(a) Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the <b>EQUINOX EVO</b> is used exceeds the applicable RF compliance level above, the <b>EQUINOX EVO</b> should be observed to verify normal operation, If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the <b>EQUINOX EVO</b>.</p> <p>(b) Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</p>			